

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-236-4  
Relating to Exemptions Under Section 27156  
of the Vehicle Code

AUTOMOTIVE PERFORMANCE SYSTEMS, INC.  
NEUSPEED P-FLO AIR FILTER KIT

Pursuant to the authority vested in the Air Resources Board (ARB) by Section 27156 of the Vehicle Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-5;

IT IS ORDERED AND RESOLVED: That the installation of the Neuspeed P-Flo Air Filter Kit manufactured by Automotive Performance System, Inc., (APS) of 1464 North Hundley Street, Anaheim, California 92806 has been found not to reduce the effectiveness of the applicable vehicle pollution control system and, therefore, is exempt from the prohibitions of Section 27156 of the Vehicle Code for 1993 and 1994 Volkswagens powered by a 2.8L gasoline engine.

This Executive Order is valid provided that the installation instructions for the Neuspeed P-Flo Air Filter Kit will not recommend tuning the vehicle to specifications different from those submitted by Automotive Performance Systems, Inc.

Changes made to the design or operating conditions of the Neuspeed P-Flo Air Filter Kit, as exempt by the ARB, which adversely affect the performance of a vehicle's pollution control system shall invalidate this Executive Order.

Marketing of the Neuspeed P-Flo Air Filter Kit using any identification other than that shown in this Executive Order or marketing of the Neuspeed P-Flo Air Filter Kit for an application other than those listed in this Executive Order and staff report shall be prohibited unless prior approval is obtained from the ARB. Exemption of the Neuspeed P-Flo Air Filter Kit shall not be construed as exemption to sell, offer for sale, or advertise any component of the kit as an individual device.

This Executive Order does not constitute any opinion as to the effect that the use of the Neuspeed P-Flo Air Filter Kit may have on any warranty either expressed or implied by the vehicle manufacturer.

This Executive Order is granted based on an engineering evaluation which shows that emissions are not affected during the Cold-Start CVS-75 Federal Test Procedure. However, the ARB finds that reasonable grounds exist to believe that use of the Neuspeed P-Flo Air Filter Kit may adversely affect emissions of motor vehicles when operating under conditions outside the parameters of the previously prescribed test procedures. Accordingly, the ARB reserves the right to conduct additional emission tests, in the future, as such tests are developed, that will more adequately measure emissions

from all cycle phases. If such test results demonstrate that the Neuspeed P-Flo Air Filter Kit adversely affect emissions during off-cycle conditions (defined as those conditions which are beyond the parameters of the Cold-Start CVS-75 Federal Test Procedure), this Executive Order shall be effectively rescinded as of the date the test results are validated. Further, if such test results or other evidence provides the ARB with reason to suspect that the Neuspeed P-Flo Air Filter Kit will affect the durability of the emission control system, Automotive Performance Systems, Inc. shall be required to submit durability data to show that the durability of the vehicle emission control system is not, in fact, affected and/or that the add-on or modified part demonstrates adequate durability.

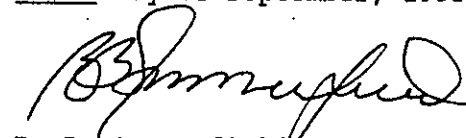
In addition to the foregoing, the ARB reserves the right in the future to review this Executive Order and the exemption provided herein to assure that the exempted add-on or modified part continues to meet the standards and procedures of Title 13, California Code of Regulations, Section 2222, et seq.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE ARB OF CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF AUTOMOTIVE PERFORMANCE SYSTEMS, INC.'S NEUSPEED P-FLO AIR FILTER KIT.

No claim of any kind, such as "Approved by the ARB" may be made with respect to the action taken herein in any advertising or other oral or written communication.

Violation of any of the above conditions shall be grounds for revocation of this order. The order may be revoked only after ten day written notice of intention to revoke the order, in which period the holder of the order may request in writing a hearing to contest the proposed revocation. If a hearing is requested, it shall be held within ten days of receipt of the request and the order may not be revoked until a determination after hearing that grounds for revocation exist.

Executed at El Monte, California, this 27<sup>th</sup> day of September, 1993.



R. B. Summerfield  
Assistant Division Chief  
Mobile Source Division

State of California  
AIR RESOURCES BOARD

EVALUATION OF AUTOMOTIVE PERFORMANCE SYSTEMS, INC.'S  
NEUSPEED P-FLO AIR FILTER KIT  
FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE  
SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF  
THE CALIFORNIA CODE OF REGULATIONS

September 1993

State of California  
AIR RESOURCES BOARD

EVALUATION OF AUTOMOTIVE PERFORMANCE SYSTEMS, INC.'S  
NEUSPEED P-FLO AIR FILTER KIT  
FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE  
SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF  
THE CALIFORNIA CODE OF REGULATIONS

by

Mobile Source Division  
9528 Telstar Avenue  
El Monte, CA 91731-2990

(This report has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board, nor does the mention of trade names or commercial products constitute endorsement or recommendation for use.)

### SUMMARY

Automotive Performance Systems, Inc., (APS) of 1464 North Hundley Street, Anaheim, California 92806 has applied for an exemption from the prohibitions of Vehicle Code Section 27156 for their Neuspeed P-Flo Air Filter Kit which is designed for 1993 and 1994 Volkswagens powered by a 2.8L gasoline engine.

Based on an engineering evaluation of the Neuspeed P-Flo Air Filter Kit, the staff concludes that APS' Neuspeed P-Flo Air Filter Kit will not adversely affect exhaust emissions on those vehicles for which an exemption is requested.

The staff recommends APS be granted an exemption as requested and that Executive Order D-236-4 be issued.

## TABLE OF CONTENTS

	Page Number
SUMMARY	i
CONTENTS	ii
I. INTRODUCTION	1
II. CONCLUSION	1
III. RECOMMENDATION	1
IV. NEUSPEED P-FLO AIR FILTER KIT DESCRIPTION	1
V. DISCUSSION OF THE NEUSPEED P-FLO AIR FILTER KIT	2

EVALUATION OF AUTOMOTIVE PERFORMANCE SYSTEMS, INC.'S NEUSPEED P-FLO AIR  
FILTER KIT FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE SECTION  
27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE CALIFORNIA CODE OF  
REGULATIONS

I. INTRODUCTION

Automotive Performance Systems, Inc. (APS) of 1464 North Hundley St.,  
Anaheim, CA 92806, has applied for an exemption from the prohibitions of  
Vehicle Code Section 27156 for their Neuspeed P-Flo Air Filter Kit which is  
designed for 1993 and 1994 Volkswagens powered by a 2.8L gasoline engine.

II. CONCLUSION

Based on an engineering evaluation of the Neuspeed P-Flo Air Filter  
Kit, the staff concludes that APS' Neuspeed P-Flo Air Filter Kit will not  
adversely affect exhaust emissions on those vehicles for which an exemption  
is requested.

III. RECOMMENDATION

The staff recommends that APS be granted an exemption as requested and  
that Executive Order D-236-4 be issued.

IV. NEUSPEED P-FLO AIR FILTER KIT DESCRIPTION

The Neuspeed P-Flo Air Filter Kit includes the following items: K & N  
air filter element, adapter plate, mounting brackets, and hardware. The  
reusable air filter element is constructed out of a woven cotton fabric  
sandwiched between two layers of wire mesh screening. The screen and fabric  
combination creates a grid-like effect which provides enhanced flow  
characteristics to incoming air as it passes through the filter. The  
element is able to be cleaned with a special cleaning agent and water.

According to APS, the Neuspeed P-Flo Air Filter is designed to be less  
restrictive than the original equipment manufacturer's (OEM) air filter

system. A low restriction air filter allows the engine to have better response as well as more power throughout the RPM band. The Neuspeed P-Flo Air Filter does not in any way interfere, remove, interrupt, re-route or modify the factory emission control system. The Neuspeed P-Flo Air Filter operates in conjunction with the OEM computer controlled electronic port fuel injection and emission control systems already certified with the stock engine. The tune-up specifications remain the same.

V. DISCUSSION OF THE NEUSPEED P-FLO AIR FILTER KIT

The Neuspeed P-Flo Air Filter Kit is designed for installation on 1993 and 1994 Volkswagens powered by a 2.8L gasoline engine.

An engineering evaluation was conducted to determine the impact of the Neuspeed P-Flo Air Filter Kit on emissions. The Air Resources Board's (ARB) concerns regarding the air filter kit are that the kit could significantly increase evaporative emissions, changes in the mass air flow metering could affect exhaust emissions, the modified air filter system remove a portion of the OEM air cleaner ducting which may have an impact on emissions, and the positive crankcase ventilation (PCV) system may be modified.

Since the Neuspeed P-Flo Air Filter Kit replaces a closed air cleaner housing with an open element air cleaner, the ARB was concerned that gasoline vapors could escape into the atmosphere. The vehicles for which the exemption is requested are equipped with electronic fuel injection which are designed to eliminate potential leaks. During a static condition, the fuel injectors are designed to be closed tightly. Also, the fuel injectors are design to operate by an electromagnet that pulls the injector open against the fuel flow. The ARB has previously reviewed tests conducted on various fuel injector sizes in which fuel flow and pressure is increased,



the fuel injectors tend to hydraulically lock. This condition causes the injector to be more difficult to open and reduce leaks. In addition, fuel injected vehicles utilize intake manifolds which are designed to flow air in only one direction inward to the intake valve. Furthermore, the design of the Neuspeed P-Flo Air Filter Kit does not alter the location of the evaporative emission canister or hoses. With these findings, staff concludes there will be no adverse impact on evaporative emissions due to the use of an open element air cleaner.

The Volkswagen vehicles applicable to this application are equipped with an Eddy Current hot wire type mass air flow sensor. The hot wire mass air flow sensor determines the air flow by the change in temperature of the wire, not flow conditions. Therefore, use of an open-element air cleaner should not affect the ability of the sensor to measure the correct quantity of air. In addition, during cruise conditions, the hot wire is super heated to burn any dust particles which have attached to wire. If gasoline vapors were escaping, the hot wire could cause the gasoline vapors to ignite, damaging the mass air flow sensor. The manufacturer would not design the mass air flow sensor wire to super heat if ignition could occur. This also supports their statement that there are no evaporative emissions escaping on the vehicles requested for exemption.

Previous aftermarket manufacturers stated that OEM manufacturers install a large amount of air cleaner ducting to isolate and minimize intake tract noise on fuel-injected vehicles. The automobile manufacturers contacted by ARB staff confirmed that the purpose of the air cleaner ducting is to reduce noise rather than impact emissions on fuel-injected vehicles. Thus, although the air filter system causes a portion of the ducting system to be removed in some vehicle applications, no emission

impact would result from this modification. Automobile manufacturers occasionally design the air needed for the PCV to be obtained from the air cleaner housing. Since these vehicles do not obtain air for the PCV from the air cleaner housing, no modification to the PCV system is needed to install the Neuspeed P-Flo Air Filter Kit.

The vehicles for which the exemption is requested are designed to operate in a closed-loop configuration, which is characterized by the Cold-Start CVS-75 Federal Test Procedure driving cycle. While the vehicle operates under closed loop configuration, the on-board computer monitors the air/fuel mixture to maintain it near a stoichiometric condition. The on-board computer receives voltage signals from the oxygen sensor and interprets them as either richer or leaner than a stoichiometric fuel mixture. Based on the oxygen sensor signal, the on-board computer either increases the amount of air flow (to richen the mixture) to maintain the fuel mixture near stoichiometric. Although the Neuspeed P-Flo Air Filter Kit could change the air flow, the on-board computer will compensate and keep the air/fuel mixture at stoichiometric levels during closed-loop operations.

However, under open-loop configurations such as quick accelerations, air and fuel is being supplied by demand and the fuel mixture is not maintained near stoichiometric. Although the Neuspeed P-Flo Air Filter Kit could potentially increase emissions during open-loop conditions, the ARB has not established an official test procedure to evaluate emissions during open-loop driving conditions. The ARB, therefore, reserves the right to conduct emission test, in the future, as such tests are developed, that will more adequately measure emissions from all driving cycles.